

PART 1 - STRAND SYSTEM C/BBC

1. GENERAL INTRODUCTION.

Each studio is provided with a Strand P.R. type electro-mechanically driven servo operated transformer dimmer bank. Operationally there is no difference between a 5kw or a 2kw dimmer. A few switched only circuits are also provided. The selection of circuits to be controlled is carried out from a cord and jack patching system, see Part II of this instruction book.

As the Strand System C/BBC and P.R. Bank uses electro-magnetically operated equipment the facilities from the same controls are more extensive than a system employing all-electric dimmers. This springs from the fact that a mechanical dimmer equipment remains at the state to which it was last called when deprived of its control, whereas all-electric systems require constant control current to hold their state.

Control levers can be uncoupled and reset while the lighting remains static and further that the new instruction to effect a change need only be issued to the channels concerned. There is no necessity, as with other systems, to set up for a state of no movement.

2. DIMMER CHANNEL CONTROLS.

Each dimmer channel has a luminous push known as the "channel switch", two Dimmer Levers - one red and one blue and a green pilot lamp.

The channel push has a reverser relay and when touched, the first time, its internal light will come on and the channel contactor is closed. Touched again, both indicator and contactor go off.

When alight, the luminous push normally is also to feed the channel dimmer clutches and this is shown on the green pilot light. Therefore a dimmer cannot be moved unless its channel contactor is on (but also see 1.5. below).

The two dimmer levers to each channel are for presetting dimmer position. Which of the two is operative is governed by the Red and Blue Preset Masters. The dimmer levers may not always show dimmer position, therefore as a check when a channel selector is held depressed it indicates on the dial on each wing, the position of that particular dimmer.

3. MASTER CONTROLS.

These are situated on the centre desk as push-pull switches, push buttons and luminous pushes. Some of the latter have on-off reversers. Foot pushes known as "toe pistons" and other pedals are also used. Dial and pilot lamp indicators are fitted as appropriate.

4. SWITCHING.

Except for the Dead Blackout (D.B.O.) key switch in the control box under the left hand side of the table, there are no switching masters as such. The luminous channel switches operate the contactor reversers directly. It must be remembered however, that the "Dimmers Only" and "Inert" controls interfere with the normal switching action by disconnecting the channel switches from the contactor reversers although at all times the lamp in the channel switch displays the state of the circuit contactor, providing the circuit switches on the studio panel are in the down position.

Clockwise operation of the key switch either at the desk or studio panel allows the appropriate on and off pushes to be used to control the main 17v rect. contactor. Removal of a key prevents the rect. being switched on or off at that position. The key switch operates without tripping any of the control set-up when it is turned off (anti-clockwise) to the position where the key can be withdrawn. When turned on the contactors are restored.

5. DIMMERS ONLY (Lamp Hold)

This luminous on-off control is roughly equivalent to "Lamp Hold". When "on" it locks the channel contactors and reversers and their state continues to be displayed at the channel switches. These latter, however, actuate a dimmer reverser in place of the contactor reversers. At the same time the dimmer clutch coils are uncoupled from the contactor reverser outputs to which they are normally connected and coupled to the dimmer reversers. The green pilot lamps to each channel are transferred in a like manner so that they show whether the dimmer clutches are energised or not.

Whenever the "Dimmers only" control is put "on or "off" it automatically cancels the combination on the green reversers. This ensures that a hidden combination (a left-over) is not unexpectedly brought into play. The required "dimmers-only to move" can then be selected by hand. Alternatively a green memory push can be used to bring in the "Dimmers Only" control and in this case the combination on the particular push will show on the green pilots as ready for immediate action.

To sum up, the internal pilot to the channel switch and the green pilot both display the same indication except when "Dimmers Only" (or "Inert" see 1.7. below) is put on, because circuit contactors and dimmer clutches are connected to the same reverser. When "Dimmers Only" or "Inert" are on, they may display different indications because the pilots are removed to the special dimmers-only reversers. The latter reversers however, operate from the same channel switch.

The moment the "Dimmers Only" control is put off the controls revert immediately to their exact state at the time it was put on. Dimmers and circuit contactors then work together.

6. PRESETTER AND MEMORY PUSHES.

Depression of the Presetter toe piston allows a touch on any of

the green pushes to memories for recall later any combination of luminous pushes in use at the moment. The Presetter must be closed first and released last. (The Presetter key switch under the left hand side of table must also be on).

There are two sets of memory pushes each numbered 1 - 20. The white pushes give the combination on both the channel contactors and clutches. The green pushes ass the "Dimmers Only" master and therefore give the combination on the green channel pilots only, the contactors being locked in their previous condition. Use of the white memory puts off the "Dimmers only" control or this may be done by hand and dimmers return to their normal condition of being in sync. with the contactors.

It is important to remember that the memory set on the green and white push of the same number is identical. The difference is solely the addition or not of the "Dimmers Only" control. Indication of which memory was used last is given by a pilot adjacent to the push. A green push does not cancel the pilot appearing against the last white push used, because it does not replace that contactor combination (which in fact remains locked). On the other hand a white push does cancel the last green pilot displayed. (See also 1.7. below).

7. INERT.

When setting up the memories it is convenient in most instances not to disturb lighting in the studio. When it is desired to ensure this, the "Inert" control is put on, which locks the channel contactors: It also trips the Red and Blue Presets to prevent dimmers moving and altering lighting thereby. The green pushes are always used to set memories and when combinations are being set up the green pilot lamps show the combination which will be captured although the channel pushes are in fact used to supply the pulse to the green reverser.

A cancel is only fitted to the green pushes so that the risk of plunging the studio into darkness is minimised. There is no method of getting the channel switches and reversers all off other than by hand or by setting a memory to off - a deliberate act.

The white pushes can be used for memory setting provided the fact that the lighting in the studio will flash is taken into account.

Note On Switched Only Channels. As these have no green reversers or pilots, setting for memory is accomplished by putting the green levers adjacent to the channel switch over to the right. In the case of "Switched Only" channels to be left "on" for the entire production, these switches should be left on and such channels will then set themselves on all memories whenever set or re-set and will not be accidentally tripped thereby.

8. PRESET ADD

No separate control is fitted for this. All memory pushes have a double touch - light first, heavy second. At first touch the combination is added to any previous combination, at second touch the combination replaces the previous one. The condition is repeated by the memory pilots.

9. DIMMING MASTERS (Centre Table)

These are:- Luminous pushes for Red and Blue Preset with change-over dials, one speed pedal with lamp indicator, extra slow speed switch and potentiometer. In addition three pushes provide Raise, Dim and Remainder Dim respectively. Controls appear for hand and foot as convenient.

10. RED AND BLUE PRESET

Two luminous pushes to energise the red or blue channel dimmer levers. These pushes also start the shaft driving motors. The change from one preset to another is visually indicated by a change-over dial and by a travel dial. These pushes are duplicated on the left and right wing panels as pilot lights, but will not operate from there. If "Dimmers Only" is in use it will cause a green pilot above the Preset pilots to light as a warning that dimmer movement might affect a lamp whose contactor is locked and regarded as static.

11. SPEED PEDAL

This is balanced to stay at any position except the fastest speed. Toe pressure increases speed. Heel pressure decreases. Speeds are:- 3, 4, 5, 7, 10, 25 and 40 secs. dimmer travel and the position of the pedal is indicated additively by pilot lamps on the centre panel. The slowest speed is known as "1" (i.e. one light) and the fastest as "7". (The speed steps can be set at the dimmer bank to give a different range if required).

12. SLOW ON (Switch & Potentiometer).

Pull switch to bring automatic impulse circuit. This is designed to be used with the pedals right back on their slowest speed. The red lamp indicates motor stopped and the speed 1 pilot, (green) motor running. The rate of impulse is increased by movement of the potentiometer levers to the right.

13. MASTER DIMMER

When the push switch is put in, the positive dimmer busbar at the control panel is decreased in voltage by an amount determined by the position of the master dimmer lever. The effect of this is to move any

dimmers in circuit at the time by an amount in proportion to the movement of the master dimmer. The master dimmer is itself remotely controlled and is therefore subject to the speed pedal and the motor running. In respect of individual dimmers at intermediate positions, the effect is to apply a proportional cut. Dimmers affected by the master dimmer are those selected and indicated on the green pilots. When the master dimmer is either fully up or short circuited the lamp (amber) in its push-pull switch will be on. It is not necessary to move the master dimmer at the time of making the cut. Rather the levels to which the cut is to be made can be determined and the master dimmer driven and set there. It is then kept shorted out until required, whereupon the switch is opened and the various dimmers are then timed down as required, using the speed pedal. To return, the master dimmer is short circuited.

14. RAISE & DIM

These pushes will move any dimmers whose channel switches are on. These dimmers will move right up or right down to out, or intermediately if they are released early.

15. REMAINDER DIM

This control is interlocked to have no effect when used by itself. Provided the Red or Blue Preset or the Raise control is "on" then this control will dim out all dimmers not selected i.e. whose green pilots are extinguished.

This control enables a cross-fade into any combination whether selected by hand or by memory push to be effected without the need to set to out, the dimmer levers of those channels which have to dim out.

16. INDIVIDUAL

When this push-pull switch is pulled out, it lights internally (white) and trips the Red and Blue Presets if "on" at the time. The three position switch will raise (top) or dim (bottom) or give a "position indication" of (centre) any dimmers whose channel switch is held depressed at the time.

17. DIAL

As stated earlier (1.2. above) every time a channel switch is pressed an indication of dimmer position is given. To prevent the channel contactor reverser relays working when a dial check only is required, the dial toe piston should be held, which will put "Inert" on temporarily thereby preventing the white reversers from being moved.

18. OPERATION TECHNIQUE

Assuming the control has been switched on, there are a few general points to observe in carrying out the operations below:-

(a) Allow the speed pedal to come back preferably to speed 5 to ensure dimmer hunting does not take place. Whenever possible switch off the Red and Blue Preset as this allows the Travel dial to reset at zero. Unless this is done an indication of completion of operation is only given when a change takes place from one Preset to the other. Changes within a preset as may be common using "Remainder Dim" will give no indication. This is particularly disturbing on slow changes.

(b) Take particular care when using "Remainder Dim" in conjunction with "Dimmers Only". Channel contactors locked and deemed untouchable can nevertheless be extinguished because their green pilots are not on and in consequence their dimmers are remainder-dimmed!

(c) A complete lock of the studio lighting is only obtained when "Inert" is put on and the timid are advised to make sure this condition exists when setting memories.

(d) When using the various controls, act deliberately particularly when working on the setting of the memory presets or when using the luminous pushes. Do not jab push buttons; give them time to work and release.

19. T.V. LIGHTING CONTROL TECHNIQUE

Generally speaking, the main advantages that centralised control can bring are:-

(a) Saving of time in bringing lighting in and out of use.

(b) Ease in which any lighting not required at the time can be killed. This saves current but above all, cuts down heat in the studio. It can also minimise interference caused by light from sets not in use.

(c) The balancing of lighting intensity by means of dimmers, i.e. a large lantern, can speak with a soft voice when necessary.

(d) The performance of lighting effect changes of the stage type, both on dimmers and by switching.

The above remarks apply to Tungsten Lighting only.

20. LIGHTING REHEARSAL TECHNIQUE

There are three main necessities.

- (a) Adequate time for plotting of changes, haste only provided a scribbled illegible plot which means delay later on.
- (b) Opportunity to digest complicated bits of lighting so that the best use may be made of the control. The immediate run-through repeated ad nauseam solves nothing.
- (c) Have a clear idea of the time available between one lighting change and the next. All too often it is possible to tie yourself in knots to set up for a complicated change only to find that you have plenty of time; whereas you can be floored by a simple change because it follows immediately on the tail of its predecessor.

21. TO SET THE CONTROL FOR REHEARSAL

Assuming that all the B.B.C. isolators are already on in the dimmer room it is necessary only to insert key and press the "ON" push at the desk or studio panel to bring everything to life.

Put all dimmer levers to the full-on position, except for channels not required in this production which therefore should be put to-off. Very often all the channels will not be needed and the setting of today's dimmer levers at full and the rest at off, gives a useful indication of the channels "in play" so to speak.

Set speed pedal at 5 and make sure "slow" switch is off.

Switch on Red preset to ensure that all dimmers run to full-on, or the rehearsal basic level required. There is no call to keep the preset on and in consequence the dimmer control potentiometers and bank motors running for the duration of the rehearsal, * but it is advisable to make sure that dimmer levers are not moved without the preset being on. This will prevent false indication and lessen checking, by using the indicator dial.

Studio lamps must have been connected by using the patching field as described in Part II.

22. TO SET THE CONTROL FOR TRANSMISSION

Put all the dimmers required to the levels at which they make their first appearance using one colour of lever, either red or blue for the purpose. Set speed to 5, press all green memories required additively to first touch, and the master for colour of preset used.

When the dimmers have reached their marks, switch off the Preset and set both red and blue levers to the next two changes (if any) but

do not use either preset. The control is now in the position of having its dimmers at one position for instant use with two other positions stored in advance. The switching presets will have already been set at rehearsal and the lights may now be brought in when required.

* In studios 3 & 4 when the Presets are "on" the fan in the right wing will run.

23. TO SWITCH ON LIGHTS INDIVIDUALLY

Any channel may be switched on by touching its luminous push, whereupon both push, green pilot, and studio lamp will light. Touched again the lamps are extinguished. (If the dimmer is down as shown on dial then only the channel push/will light.) Similarly if the "Dimmers Only" control is on only the green pilot will light.

24. TO SWITCH A GROUP, OR GROUPS, OF LIGHTS

The channel switches required should be put on and the others put off, as described in 1.23. above. The Presetter toe piston is then held before any green memory push is touched. After the latter is released, the setter is also released.

The particular group of lights is now captured by that memory push and can instantly be recalled by using its white counterpart. Both the luminous pushes and studio lamps will light when recalled unless the "Dimmers Only" or "Inert" positions rule otherwise.

Where there are several groups to memorise, the foot can hold the Setter piston all the time even though it is desired to use the Cancel push, as this latter is permanently connected. The lights in the studio will not be affected when setting if "Inert" is put on.

25. TO SWITCH ON ONE GROUP AND EXTINGUISH ANOTHER

Normal working of a memory push automatically provides this, because while lighting up the chosen group it automatically cancels the remainder of the the channels. (Provided 2nd touch is used)

26. TO SWITCH OFF ALL LIGHTS

Use key switch and push buttons (see 1.4) under left hand side of table.

27. TO ADD ONE GROUP TO ANOTHER

Assuming that some of the memory pushes have been preset, the combinations on each then can be used additively provided they are pressed to first light touch only.

This addition is not restricted to Presets, any combination

arrived at by hand selection can have any Preset added to it by using the first touch.

28. TO LOCK THE STUDIO LIGHTING TO BE INDEPENDENT OF THE CONTROL

The "Inert" control is put on. This disconnects the reversers which feed the lighting contactors from the channel switches. The Red and Green Preset pushes are also tripped.

29. TO SET A GROUP FOR INSTANTANEOUS SWITCHOVER

This can be done by using the white memory pushes to second touch, the new combination replacing the old instantaneously (providing the Dimmers are up).

30. TO CHECK THE CONTENT OF A MEMORY PRESET BEFORE USE

If it is required to make sure a memory preset is really correct before using on the lighting in the studio, the "Inert" can be put on locking the studio lighting, then the memories can be checked by using the green pushes and observing the green pilots. When "Inert" is put off the board reverts to state before "Inert" was put on.

31. TO MODIFY A MEMORY PRESET COMBINATION BEFORE USE

Put on "Inert" before using the particular memory push. Then the combination can be modified by putting the channel pushes on or off as required - the result showing on the green pilots. The new combination is then set using the presetter in the normal way.

In a heavy production use of "Inert" in this way can save the memory presets for more vital work and a combination which returns with but slight variations can be appropriately modified by hand.

32. TO PRESET FURTHER GROUPS WHILE LIGHTING IS IN USE

Put "Inert" on before using Presetter, then proceed, as already described in (I.6.) above.

33. SWITCHING FROM ONE STUDIO AREA OR GROUP TO ANOTHER

No masters for specific studio areas are fitted because the areas required to be mastered will vary with the number of scenes, their size and the layout of the production in the studio. It is intended that the memory presets shall be used to capture the lighting for a particular scene area. Memory presets can be used in any order and for any number

35. TO RAISE OR DIM LIGHTS INDIVIDUALLY

Put Red or Blue Preset on, set speed pedal and move dimmer lever appropriately.

In the unlikely event of the channel switch not being on (i.e. the channel has to be switched in at a dimmed position) it will be better to use "Individual Go". Pull this witch out, hold the channel push and move the 3 position switch up or down appropriately. When "Individual Go" is used, the channel push is frozen in respect of its lamp switching action, and a white pilot near the Red and Blue Presets and Raise and Dim shows, these have been tripped and locked out.

36. TO RAISE A GROUP OF LIGHTS TO FULL

Switch on the channels required, set speed and depress the Raise Toe piston for as long as the dimmer speed requires.

37. TO DIM A GROUP OF LIGHTS TO OFF

Switch on the channels required, set speed and depress the dim toe piston for as long as the dimmer speed requires.

38. TO RAISE OR DIM A GROUP OF LIGHTS TO A VARIETY OF DIFFERING LEVELS

Either the red or green dimmer levers should be set as required and provided the channel switches are on, the Red or Blue Preset will actuate these dimmers, it is only necessary to set dimmer levers in respect of the channel switches that are on.

If a large number of channel switches are on and the group of dimmers is comparatively small, it will be preferable to use the "Dimmers Only" and then pick out by hand the ones on which dimmer movement is required.

If the dimmer group required has been set on a memory then it is only necessary to press the green memory push concerned. This will put on "Dimmers Only", show the new dimmer combination on the green pilots while continuing to display the contactor combination on the channel switches.

To return to the previous state of affairs, it should only be necessary to press the white memory push which a white pilot shows to have been the last used.

39. TO CROSS FADE COMMON CHANNELS FROM ONE SET OF DIMMER LEVELS TO ANOTHER

If there are circuits common to two groups which have to change level during a cross-fade then two presets have to be used. (For all other cross-fades only one preset with "Remainder Dim" need be used - see I.41. below).

The two sets of levers are set up as required and the

Red preset will bring in one and the Green the other.

If however a set of levels once used is then discarded, then three sets of levels are possible to any group or area. The first being set as actual dimmer position in advance and merely switched in by the channel switches; the second and third being set on the dimmer levers and driven in by the Red or Green Master.

There is no reason why once a dimmer preset is discarded, its levers should not be reset, provided of course time permits.

40. TO GO FROM ONE SET OF DIMMER LEVELS IN ONE AREA TO ANOTHER SET IN ANOTHER AREA

This is a switching cue, the dimmers remaining set at their levels. Set the dimmer levels as described in I.35. above then use the memory preset pushes to switch on the groups of channels as required. These channels will of course light at the intensity already determined by the dimmers.

41. TO CROSS FADE FROM ONE STUDIO AREA OR GROUP TO ANOTHER

"Remainder Dim" is used for this purpose. The groups are set on memory pushes. The Red or Blue Preset is put on or the Raise push is depressed with "Dimmers Only". If "Remainder Dim" is now held then dimmers of any channels whose green pilots show them not to be selected will dim out irrespective of the setting of their dimmer levers.

The following example (cf. I.33 above) assumes three scenes only.

Using Presetter toe piston - Set scene 1 lighting on push 1
 - " " 2 " " 2
 - " " 3 " " 3

Add push 1, 2 & 3 to get circuit contactors in. (Making sure Dimmers are down first)
 Red Preset and "Dimmers Only" are now put on (for example) plus "Remainder Dim" and a lap change is obtained as follows:-

Scene 1 - press push 1 to second touch
 Preview scene 2 press push 2 to first touch
 Scene 2 - press push 2 to second touch
 Preview scene 3 press push 3 to first touch
 Scene 3 - press push 3 to second touch

and so on.

Lighting channels which must not change must be set "on" on all three memories, otherwise "Remainder Dim" will take them out as soon as their green pilots are extinguished.

The above method can be used for cross fades within the same scene as in variety shows.

Alternative Method: Instead of using the two different touches on the memories to get additive effect for Preview (or to delay the departing channels until the incoming ones make their presence felt) the memory pushes can be punched to second touch and the foot placed on "Remainder Dim" when removal has to take place.

42. CHASING

"Remainder Dim" can be used to permit chasing by individual channels. Suppose a series of channels must light and die one after the other, then these channels plus other lighting are selected on the channel switches. The levels for all are selected on Red Preset. "Dimmers Only" - "Remainder Dim" and "Red Preset" are put on. The chasing channels can then be dimmed up and extinguished each as their green pilots are put on or off. This will probably be more rapid and accurate than if the dimmer levers themselves are used to chase. The principle can be extended to groups by employing memories for these. Providing circuit contactors are all in.

43. TO FIND OUT POSITION OF PARTICULAR DIMMERS

Hold the channel push concerned and read on wing dial called "Dimmer Position". If "dial" is depressed at the same time, then the luminous push is frozen in respect of its lamp switching action.

44. DIMMER SETTING

Whenever possible individual dimmer intensities should be set up in advance and be brought in by a group master switch, or by a master fader or by a preset because the setting up of a large number of dimmer intensities in a hurry, is likely to lead to inaccuracies. When properly set, the board should rely on its presets and group masters aided by occasional movement of individual dimmer levers when absolutely necessary.

45. ELECTRICIANS TEST PANEL

Each channel contactor is connected to its contactor reverser output via 3-position switch on this panel. In the top position the contactor coil is connected direct to live. In the centre position it is dead and in the bottom position it is fed from the reverser and is under control of the main lighting control. A push is also provided to raise the dimmers when the latter is not in use. Also push buttons with Master Key for switching on Main 17v. rectifier.